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EDITORIAL

There has been a considerable revival these last few years in evangelical opposition to evolution. For a time it seemed as if, in Britain, the matter was closed. Evangelical scientists and theologians largely accepted the Darwinian understanding of origins, and tried to knit it together with their interpretation of Scripture. There was some dissent, but it was little in evidence.

But things are changing. The publication in 1961 of The Genesis Flood by two American scholars created something of a sensation in its attempt to re-establish the 'Flood geology' of pre-Darwinian days. Since then, and as an element in the general evangelical resurgence, a spate of publications has flooded onto the market – many from the pens of scholars. Across the Atlantic the remarkable growth of the Creation Research Society has contributed handsomely to this fresh scholarly interest. In Britain the Evolution Protest Movement, founded almost fifty years ago, has been joined by a number of new groupings.

The Biblical Creation Society was founded in 1977 to meet a special need: that of Christian students. Still a fledgling organisation, BCS is launching this new journal which it is hoped will be read by students and also by a wider readership. So far as we are aware there is in Britain no similar magazine, publishing informed discussion of the evolutionary hypothesis and the Biblical teaching on creation.

What then is our position? Many alternatives to the 'orthodoxy' derived from Lyell and Darwin have been proposed, all the way from Gosse's Omphalos to the 'Gap' theory. Some evangelicals are deeply committed to particular scientific models which have developed as alternatives to the evolutionary position. The 'mature creationism' of Whitcomb and Morris has garnered widespread support, while some - perhaps especially among the older generation - still hold to the 'Gap' between Genesis 1 : 1 and 1 : 2. While we have been influenced by Whitcomb and Morris, and while individual members of our Committee personally favour particular scientific models, as a Society the BCS does not stand for this or that creationist view over against others.

On the contrary, we take our stand with every attempt to let the Bible speak for itself, laying down its own guidelines and parameters for our interpretation of God's world. It is here that there lies the great strength of Whitcomb and Morris' book, in its method. They sought first of all to determine from Scripture what - if anything - it had to say about origins, and then to examine the scientific data in that light. This is the Christian approach to Scripture and the world. It may lead to 'mature creationism' or to some other model as a vehicle for our scientific understanding. But it is the method that is all-important, the result of our faith that the God who made the world is the God who speaks in Scripture. It is with such introductory questions that the articles in this issue are concerned.

Essentially we face in this discussion of origins a conflict of world-views. The evolutionist sees the history of the world as a gradually ascending curve, with material and moral progress the result of the passage of time. But the Christian, informed by Scripture, knows that the graph must begin with a high plateau from which the line of progress plunges with material, moral and spiritual disintegration - all the way to the call of Abraham. And it is not until the seed of the woman bruises the head of the serpent in the death and rising again of Jesus Christ that the curve can turn and begin its upward journey. These are two utterly contradictory accounts of history, and the confusion and ambiguity of attempts to marry them in 'theistic evolution' show how irreconcilable they really are.

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It is hoped to publish the next issue in February, 1979. We look forward to receiving correspondence, both for publication and for our own guidance. Further information about the Biblical Creation Society may be obtained from the address inside the front cover.

In addition to articles, we plan to carry reviews. In the February issue we hope to review the new book by Professor Edgar Andrews, Professor of Materials Science in the University of London, From Nothing to Nature. Professor Andrews has recently consented to become the President of the Biblical Creation Society.

Our thanks go to Michael John Smithson, of Trinity College, Bristol, who gladly and speedily designed our cover; and to our contributors.

We trust that this venture will receive support, being distributed and read as widely as possible as it is used under the hand of God to stimulate our thinking and bring it subject to His Word.

Nigel M. de S. Cameron,
Dunblane

NEWS

We hope to publish information about forthcoming activities and publications likely to be of interest to our readers, as it becomes available. Please let us know of meetings, conferences, booklets, and so on, which you think worth a mention.

The two papers accompanying the autumn issue of Creation (published by the Evolution Protest Movement) will be:
219 'Genealogies and Early Man', by David T. Rosevear, PhD; Lecturer, Portsmouth Technical College;
220 'Chemical Evolution - theories of the origin of life', by David B. Gower, DSc, PhD. CChem, FRIC, FIBiol; Reader in Biochemistry, Guy's Hospital.

The Rainbow Press is a new publisher which aims to produce material in two categories. First, technical monographs relating to scientific issues and careful Biblical exegesis; and, secondly, literature for children, especially bridging the gap between 7 and 12 years. An item in the first category is now available: Focus on Creation, papers presented at the Swanwick conference on Creation and Origins earlier this year.

The Biblical Creation Society is producing a series of pamphlets and booklists, some of which are already available. They are intended to be of special value to students. Two leaflets, intended for free distribution, outline the basic issues for Christian students - one of them aimed specially at those studying scientific subjects, the other of more general interest. Six booklists cover the following areas:

1. Zoology, botany and biology;
2. Geology;
3. Theology and the Bible;
4. Physics and Chemistry;
5. Dating;
6. General list, of interest to teachers and others.

INVESTIGATING ORIGINS - SOME SCIENTIFIC ISSUES

David Watts

Introduction: Origins and Religious Beliefs

Although it is the view of this writer that evolutionary theory cannot be satisfactorily reconciled with the Biblical doctrine of Creation, nevertheless both concepts share one feature in common. Over against the belief of some in the eternity of the world, most evolutionists conceive of a real origin to the universe - at least as we now know it; a beginning, or rather a series of beginnings. To this extent, secular evolutionism, like Marxism,[1] may be viewed as a sort of Christian heresy; an evolution - of - the-gaps mythology providing a secular explanation for the series of emergent transitions 'from particles to people' with plant and animal life forms serving as stepping stones on the way.

The participants in the creation/Evolution debate therefore, are all talking about origins; events which are wholly or partly unrepeatable, like other unique situations in history. Thus the epistemological question arises, as to the means by which we may come to know the truth about origins. It may be helpful for us to recognise that whatever our position we all approach this issue with what may be termed negotionable and non-negotionable opinions. Leaving aside at present the somewhat unstable theistic-evolution position, we may note how these two categories of belief appear in this debate. For the consistent evolutionist the non-participation of the Biblical Deity in the origin of the cosmos is a non-negotionable truth. While the mechanism of evolution may be open to negotiation in the halls of science, the fact of evolution is axiomatic and the credo of the late Julian Huxley meets with approval: "The whole of reality is evolution."[2]

Like the evolutionist, the Christian creationist is also is also 'biased', for the latter has now learnt to trust in the grace and power of the God who is over all things, who has spoken in His Word concerning the origins of His World. But for the Christian there are, within the limits of faithfulness toward God's revealed counsel, some issues relating to origins which are open to different conclusions in the light of the evidence; that is, scientific evidence where it may be adduced and perhaps also exegetical evidence relating to the interpretation of certain secondary details of the Biblical account of creation.

Religious Beliefs and Scientific Method

So far then, we have contended that the approach that we all have to origins is at least partly influenced by our basic religious commitments, either for or against the Biblical Creator. But the specific aim of this paper is to discuss scientific approaches to origins. Can we now simply proceed via a neutral scientific method, leaving our basic religious attitudes and convictions on one side? To some extent this is undoubtedly possible. There is a relative neutrality of science such that the 'facts of the matter' may often 'speak for themselves' and settle many scientific questions. However the absolute neutrality of science is a myth and this is especially the case when Origins are under consideration, for then a modified and less than rigorous scientific methodology is utilized, since the 'facts of the matter' are here largely inaccessible.

The concern of what we will term normal science is with repeatable events, which permit the rigorous controlled experimental testing of explanatory theories and models. Additional empirical facts and observations may be obtained fairly readily. Theories may also predict specific new phenomena which then can be observed. Such theories are in principle falsifiable by unfavourable experimental results.

The theories of normal science are usually formulated within the framework of more general concepts. In Physics, for example, the principle of energy-conservation serves as a conceptual framework or paradigm and this principle has, historically, influenced the genesis of specific theories, such as those concerned with the phenomena of radioactivity. Energy conservation is a concept which fits harmoniously into the Christian - Theistic world-view and this is partly the reason for its original adoption and subsequent retention. Possible alternatives savour of irrationalist world-views. This example may serve to illustrate the thesis that religiously orientated world-views impinge upon the conceptual frameworks of normal science, which, in turn, serve as constraints on the formulation of acceptable theories. Moreover, it should be remembered that, historically,[3] modern science arose through the direct influence of the Christian Theistic world-view. For in Christian terms, the repeatable events upon which the rigorous nature of normal science is dependent are a reflection of Divine Providence, and specifically of God's covenant faithfulness towards the earth and mankind in accordance with the pronouncements of Genesis 8:22; Jer. 33:20f , etc. If therefore we must reckon with the underpinning of science by philosophic world-view(s) and also the functioning of conceptual frameworks in the structure of normal science, this is even more the case with what we shall term palaeo-science, by which we seek to investigate origins.

A Methodology for Palaeo-Science?

One reasonably serviceable approach to origins in terms of palaeo-science is by contrasting different 'models' of origins. We shall first discuss creationist models before examining in more detail those framed in evolutionary terms.

A creationist 'model' could be formulated on the basis of a straightforward reading of Genesis, as follows: (1) The earth was formed at a finite date in the past, perhaps a few tens of thousands of years ago (rather than millions of years before the present). (2) The earth was populated with all the basic discrete 'kinds' of plants and animals from the earliest period of the history of life, and these 'kinds' had sufficient genetic endowment to produce variation in their progeny, resulting in new sub-species. (3) Mankind also was formed in this same period. (4) Primarily, though not exclusively, through the influence of catastrophic events thousands of years ago, plant, animal and human remains were fossilized. One should expect 'gaps' in this fossil record - i.e. the absence of transitional forms of living organisms, because such creatures never existed dead or alive between the original created 'kinds'. (5) Intelligent 'humanoid' forms of life are not expected to exist on other planets.

It is apparent that what we have in the above sketch is a whole series of models, each of which relates to one or more of the 'normal' sciences of Geology, Botany, Zoology, Genetics, Anthropology, Palaeontology, Exobiology. etc. A few features of the 'model' could be regarded as predictions, but one would be looking essentially for consistency of all data with these propositions rather than expecting to generate predictions of as-yet-unobserved phenomena on the basis of the model. Thus, for example, items (4) and (5) above are formulated in mainly negative terms. We conclude that by so-called creationist 'models' one is talking about creation rather generally, in contrast to the highly specific use of the word 'model' in sciences such as Physics. Nevertheless there is some merit in speaking of models of origins, providing one does not expect too much from this approach. Of course the reason why creation models are not over-specific is that creation events are, by definition, super-natural and would have been no more susceptible to scientific analysis if human observers were present at the time. It is only the results of these creation events which may be open to palaeo-scientific investigation.

Because evolution is an attempt to interpret origins in materialistic terms, it is possible to formulate the evolution 'model' in considerable detail; for example, as follows:–

1. The earth and at least some stars are billions of years old.
2. Chemical Evolution.
   Life in the form of one-celled organisms evolved from non-living matter. For this to have occurred:–
   (a) The atmosphere of the early earth was reducing not oxidising.
   (b) Organic molecules, including bio-monomers such as amino-acids and nucleotides, were formed in significant concentrations on the early earth through the action of natural sources of energy.

(c) Bio-monomers polymerised spontaneously on the early earth to form significant concentrations of information bearing biopolymers such as proteins and/or nucleic acids (DNA, RNA etc.)

(d) Stable, complex, metabolically active systems were formed spontaneously from 'biologically active' proteins (such as enzymes), nucleic acids, coenzymes, high energy phosphate compounds (ATP), porphyrins, etc.

(e) The first living cell formed by the spontaneous assembly of metabolically active sub-systems.

3. Biological Evolution.

All plants and animals evolved from one-celled organisms. This implies that:–

(a) Viruses, bacteria, plants and animals are all interrelated.

(b) The Protozoa gave rise to the Metazoa.

(c) The various invertebrate phyla are interrelated.

(d) Within the vertebrates, the fish gave rise to the amphibia
the amphibia to reptiles and
the reptiles to birds and mammals.

Sometimes this is expressed in other words,

i.e. that the modern amphibia and reptiles had a common ancestral stock, and so on.

4. Human Evolution

Man's body evolved from animals.

At this point we may note that the term 'evolution' is often used in two radically different ways. When used to denote 'horizontal' changes within particular 'kinds' of animals, by which the genetic variability comes to visible expression, this 'special theory of evolution' is quite compatible with the Biblical view of creation - which does not teach the fixity of species. However, the term 'evolution' properly refers to the 'general theory' which is concerned with postulated 'vertical' changes from one major class or 'kind' of animals to another - or even more generally being extended to explain the origin of the living cell, in terms of chemical evolution. Some authors are guilty of semantic sleight of hand by suggesting that observable 'special' evolution (horizontal changes) is proof of non-observed 'general' evolution (vertical changes).

Examination of Evolutionary Models

There are really two questions at issue when we speak of evolutionary 'models', concerning:–
a) whether evolution has occurred, and
b) the mechanism(s) by which it could have occurred.

Question A is an historical question - and for those who discount Divine revelation concerning such events, the only possibility is to hope to interpret a 'tape-recording' of the events, such as is believed to exist in the fossil record. Unfortunately, the fossil record - unlike modern tape-recordings and Holy Writ - lacks the attribute of perspicuity. Indeed, far from the fossil 'record' unambiguously and independently unfolding the evolutionary events of the past, it is the hypothesis of evolution which is utilized by palaeontologists to classify index fossils in sequence and thereby to identify particular stratigraphic layers of rocks. The fossil record thus involves a serious case of circular reasoning and affords no proof that evolution has occurred in the past. This subject merits further study and a helpful review has been published recently by Anderson and Coffin.[4]

Turning now to the question of evolutionary mechanism, we identify the two major stages as biological and pre-biological (or chemical). The latter is concerned with the origin of the first living cell. In Darwin's time this aspect was almost entirely overlooked, but independently in the 1920's Haldane and Oparin both realized the necessity of extrapolating the General Theory of Evolution backwards in time to provide a materialistic account of the origin of the cell.

There are several essential stages involved in virtually any theory of chemical evolution, which have been listed previously. Each of these stages is crucial and failure to provide a satisfactory model for any one amounts to failure of the entire theory. Chemical evolution was originally formulated in terms of chance processes - and although the probability of the overall process was vanishingly small the proponents of the theory were content to hope that vast ages of time would eventually make the improbable event a certainty. More recently, the chance theory has fallen into disfavour and a deterministic approach has been sought, as is evidenced by one book with the title 'Biochemical Predestination. Deterministic models for chemical evolution are at least dignifiable with the title 'scientific theory' - because they are certainly vulnerable to falsification. Present day chemical laboratory experiments serve to show that the crucial functional protein and information-bearing nucleic acid molecules do not spontaneously assemble outside the living cell under the influence of deterministic and teleological properties attributed to their small-molecule constituents.[5] Moreover, as we have argued in detail elsewhere,[6] it is essential to the information-bearing capability of DNA and protein biopolymers that their constituents should not possess such deterministic properties leading to unique and invariant structural sequences. Flexibility of biopolymer chain sequences is an essential prerequisite of 'molecular languages' and the genetic code.

In view of this situation it is hardly surprising that chance models are still being propounded, as in the following excerpt by Nobel prize-winner Francis Crick in an article[7] entitled "The Origin of the Genetic Code" :–

> "The theory seems plausible but as a theory it suffers from a major defect: it is too accommodating. In a loose sort of way it can explain anything. A second disadvantage is that the early steps needed to get the system going seem to require rather a lot of chance effect. A theory of this sort is not necessarily useless if one can get at the facts experimentally. Unfortunately in this problem this is just what is so difficult to do."

One major prerequisite for chemical-evolution models is the assumption that the atmosphere of the early-earth was composed of chemically reducing gases, such as hydrogen, ammonia, methane, hydrogen sulphide, hydrogen cyanide, etc. By contrast our present atmosphere is oxidizing, containing free oxygen and in which other elements exist in an oxidized state. Most of the compounds found in living cells, however, are mainly in a reduced state. They could not have been formed spontaneously in an oxidizing atmosphere without being spontaneously oxidized. Evolutionists are, therefore, forced to postulate that the earth had a reducing atmosphere, otherwise their model would be a complete non-starter. It would seem that allegiance to the uniformitarian principle that 'present conditions are the key to the past' can be dispensed with whenever it is necessary. So much for a consistent methodology !

There are certain geological evidences relating to the chemical character of the primitive earth's atmosphere which, while still controversial, show that not only is there no firm evidence for a former reducing atmosphere, but much against it and in favour of an oxidizing atmosphere from the earliest times.[8]

The Status of Biological Evolution

Whereas chemical evolution concepts can often be pinned down to empirically testable propositions, biological evolution 'theory' is a much more slippery customer !

As is widely known, the Darwinian theory was propounded at a time when biological and biochemical knowledge was scanty to say the least. At that time there was no understanding of the laws and mechanisms of inheritance. With the discoveries of Mendel's laws and the other findings of early-modern genetics, Darwinism was modified into the current neo-Darwinist concepts. That is, natural selection acting upon variation in a population (generated as mutations, etc.), leading to survival of the fittest.

In recent years the concept of survival of the fittest has come under criticism by scientific philosophers, with the charge that it does not qualify as a scientific principle since it involves a tautology. Thus the prominent geneticist, the late C.H. Waddington[9] wrote:

> " Natural selection, which was at first considered as though it were a hypothesis that was in need of experimental or observational confirmation, turns out on closer inspection to be a tautology, a a statement of inevitable although previously unrecognised relation. It states that the fittest individuals in a population (defined as those which leave most offspring) will leave most offspring."

Another problem associated with the untestability of evolutionary theory is that the theory explains too much. Grene points out that "Whatever might at first sight appear as evidence against the theory is assimilated by redefinition into the theory." [10] Evolutionary theory is vague and general enough to accommodate almost any data. Two ecologists, Birch and Ehrlich emphasize this. They state:[11]

> "Our theory of evolution has become, as Popper described, one which cannot be refuted by any possible observations. Every conceivable observation can be fitted into it. It is thus 'outside of empirical science' but not necessarily false. No one can think of ways in which to test it."

There are several other instances of unsatisfactory methodology - for example the argument from homologous structures in comparative anatomy. Lee[12] points out that the argument is logically invalid:

> "He (Darwin) argued that morphological similarities were due to common descent and yet offered no further really acceptable evidence for common descent save morphological similarities. A circular piece of reasoning if there ever was one."

Hull[13] makes the same complaint:

> "It is tautological to say that homologous resemblances are indicative of common line of descent, since by definition homologous resemblances are those resemblances due to common line of descent."

More could be said about the logical inadequacies of Neo-Darwinism, but there is much in readable and accessible form in the book by Norman Macbeth.[14]

Finally, even if a plausible mechanism were to be propounded for evolution, it may be doubted whether there has been sufficient time for that mechanism to have operated in the past. The subject of determining the age of earth is complex, and to embark upon a brief treatment now would be unsatisfactory. A lucid outline of the major issues has been presented recently by Professor Andrews,[15] which highlights the fact that, irrespective of the evidence, the evolutionist is forced to postulate a vast age for the earth. It cannot be too emphatically stated that apart from Divine Revelation there is no possibility of certainty about the age of the earth, as on any reckoning earth's origins were long ago and there are so many assumptions involved in extrapolation back into the past.

In conclusion, having discussed the problems of investigating origins, we have seen that testing models of origins is not always straightforward, even in principle. The General 'Theory' of Evolution is a chain of concepts every one of which must be shown to be valid. However, while some of these concepts can be tested, others are 'outside of empirical science.' The failure of current, and any foreseeable models for evolution at points where they can be tested throws doubt upon evolutionary mechanisms in general. There is great scope for further rigorous examination of all aspects of palaeo-science, involving study of new data - such as that gathered through space exploration, and the reinvestigation of many of the traditional problems.

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INTERPRETING GENESIS:

The Hermeneutical Problem of Genesis 1-11

Noel Weekes

Like any discipline hermeneutics can suffer from being used to solve problems which lie outside of its sphere. Much of the modern discussion of hermeneutics is inconclusive because it involves an interchange between men who differ not at the level of hermeneutics but at the more fundamental level of religious pre-suppositions. Hence to put this paper in its proper context it must be stated that this investigation begins by assuming a certain approach to religion, namely that of evangelical Christianity and its view of Scripture. [1]

In considering the hermeneutical problem of the early chapters of Genesis it is important that our own historical situation be clearly in view. We are not the first Christians to be troubled by the teaching of Genesis. Simply because the Bible has a different view of origins to those put forth in human philosophy there is a period of conflict whenever the church comes under the influence of a human philosophical system. Thus any defender of neo-Platonism in Augustine's day or of Aristotelianism in the late Middle Ages found himself in trouble with Genesis. It is a gross oversimplification to act as though we alone face a problem here. Nevertheless, the problem for most Christians today is generated by a specific challenge, namely that of biological evolution and related theories. I believe that there are deeper problems than merely the problem of Genesis. If we take the theory of evolution as established and modify our interpretation of Genesis accordingly, then we introduce a problem for the doctrine of Scripture. It is nonsense to speak of the unique and total authority of Scripture at the same time as we change our interpretation of Scripture to accord with theories drawn from outside of Scripture. Hence evangelicals have tended to seek for principles within Scripture itself which will allow them to interpret Genesis in a way that is compatible with evolution. If Scripture itself forces us to such an interpretation then we are not subjecting Scripture to evolutionary theory. It is with these attempts to find such principles within Scripture that this paper is mainly concerned.

However, there is need to establish first that the basic problem can really be reduced to hermeneutics. Particularly this must be demonstrated when there has been a tendency [2] to solve the problem by regarding the Biblical and the evolutionary descriptions as complementary rather than conflicting. This may be expressed in many different ways but the basic idea is a distinction between religious, theological and/or naive explanations as distinct from scientific, technical ones. It is argued that there is no conflict because the two approaches are in separate spheres or on separate levels.

It must be emphasised that this in itself does not solve the basic problem. It merely shifts the point to be proven. If we interpret Genesis in terms of this religious/scientific distinction we may be just as guilty of imposing an alien authority upon the Scriptures. We must first establish that such a distinction is warranted by Scripture. The distinction itself looks suspiciously like Kant's noumena/phenomena distinction. It makes little difference in principle if the foreign authority is that of Kant rather than Darwin.

In saying that the distinction must be demanded by Scripture itself before it can validly be employed, one misconception must be avoided. If someone approaches the Scripture, already accustomed to seeing things in terms of these Kantian categories then the basic question has already been decided. Is the Scripture a book of religious truths or a textbook of geology? We naturally tend to say it is the former. Yet this question may pose a false dilemma. There is always the possibility that it is a book of religious truths which lays down basic principles which are relevant, even mandatory, for geology. If the question is posed so as to exclude this last alternative, and Kantian philosophy so poses the question, then the basic problem has been solved not by appeal to the explicit teachings of Scripture but by a philosophical presupposition drawn from outside of the Scriptures.

A second way in which an attempt is made to solve the problem, without having to resort to the difficult task of establishing internal guide lines for the interpretation of Genesis, is by appeal to general revelation. It is claimed that since the creation is itself revelatory of God we do not impose an outside authority when we interpret Scripture in terms of science. However, once again, the basic problem is not solved but merely camouflaged. Is our concept and use of general revelation a valid one or is "general revelation" merely a label which allows us to ignore or destroy Biblical teaching? The question can only be decided by establishing a correct view of general revelation on the basis of Scripture. One may say categorically that a Biblical view of general revelation gives no support to the common use of science to determine our interpretation of Genesis.

First, there is no indication in the Bible that general revelation tells us about the means God used in creating the earth and life upon it. The passages which theologians appeal to in establishing a doctrine of general revelation, such as Ps 19, Rom 1 etc., tell us that creation reveals the nature of God. We may argue that the creation reveals the glory and power of its creator. We have no warrant for saying that it "reveals" scientific theories.

Secondly, Rom 1 is adamant that sinful man suppresses and distorts the revelation of the creation. Any view of the creation that commands a consensus amongst unbelievers must be suspect. The appeal to certain scientific theories as though they are to be treated as revelation is completely invalidated by the Biblical teaching on general revelation.

Finally, even if one were to grant that the creation does clearly reveal the manner in which God created the heavens and the earth, we would have to maintain the distinction between what the creation reveals and what men say it reveals. This is equivalent to the distinction between infallible Scripture and fallible later theories. Thus we would have to decide whether evolution, etc., was actually what was revealed by creation. Discussion of this question lies beyond the realm of this paper, but a few remarks may be made.

In order to conclude that a scientific theory is a correct interpretation of general revelation one must be certain that the method by which it was established was not in any way contrary to Biblical teaching. We certainly cannot say this for a science which systematically excludes any supernatural factors. There is no logical alternative to evolution once the intervention of God has been excluded.[3] Furthermore, even amongst those who metaphysically accept evolution there is no certainty that it has been proven.[4]

Another of the attempts to solve the problem is that which claims that God expressed himself in the thought forms of the day.[5] It would therefore be wrong to attempt to make these categories authoritative for our scientifically sophisticated age. The same reservation is valid here as previously. This assertion about the way in which God revealed the history of creation must itself be justified by Scripture.

Parenthetically it should be noted that this argument is formally identical with that used by Bultmann in his appeal for the demythologisation of the resurrection narratives. He similarly argues that the resurrection narratives are expressed in terms of concepts held in that day which cannot be taken literally today. Here evangelicals typically maintain a great inconsistency, being ready to accept a form critical method when it applies to the OT but not to the NT.[6]

To return to the main point, the argument being considered has a number of serious weaknesses. In order to apply it consistently one must first make some sort of a distinction between the cosmology implied in the terms used and the theological truth conveyed by the use of those terms. That is to say, unless one wants to remove the whole of Genesis 1-11 from the Bible one argues that theological truths can be separated from the views of the physical universe implied. Such a distinction is just a variant on the Kantian noumena/phenomena distinction discussed above.

It would greatly help the discussion if this supposed use of concepts common to the era was more carefully specified and defined. One would like more than the bare assertion that the Bible employed the common concepts of the day. For the argument to be valid this would have to be carefully established. Once again this lies outside of the main subject of the paper but a few remarks are necessary. One must first reckon with the fact that certain ideas or stories may be shared by the Bible and surrounding cultures, because they are both based on a historical event. For example, it would be rather ridiculous to argue that God chose to convey certain theological truths in terms of the flood concepts already possessed by the Mesopotamians. Obviously both Bible and Sumerian traditions mention a flood because there was a flood.

As in the case of evolutionary theory there is a problem created by the fact that much work in the Ancient Near Eastern field specifically excludes God's activity. Hence the ideology and concepts of Israel must be considered as derived from its neighbours. As long as this view is prevalent the uniqueness of Biblical thought is depreciated and denied. A more mundane problem is the fact that when the discipline was younger it was natural to use the known to illuminate the unknown. Problems were solved by the use of Biblical analogies and the impression thus created of a greater degree of common ground than was warranted.[7] More investigation has a tendency to remove this false overlap.[8]

If supernatural intervention in the history of Israel is rejected the most plausible explanation for the religion of Israel derives it by a process of ideological evolution from Israel's neighbours. It follows then that the concepts of Israelite thought must be those common at the time. However, if we do not make this assumption, and the Scripture will not allow us to make it, then we must carefully investigate the thought of the Ancient Near East in order to see if the same concepts are used as in the Biblical text. Even this search is fraught with problems of subjectivity. Some version or other of the flood story was known in Mesopotamia. There was also a memory of the fact that at one time man had a common language, though to my knowledge the confusion of tongues was not connected with the tower of Babel. One resemblance which is often referred to is that between the creation of the heaven and the earth in Genesis, and the splitting of Tiamat to form the heaven and the earth in the Mesopotamian Enuma Elish legend.[9] The tree often depicted on cylinder seals has been connected to the tree of life.[10]

These last two examples raise another set of problems. When it is said that God employed symbols common in that day is it meant that both the symbol and what is symbolised were already known, or that only the symbol was known with a completely different connotation? The distinction is an important one. For this argument to be convincing the former must be the case. Otherwise one is saying that God gave the symbol a completely new meaning. And if he did that we are no longer dealing with symbols common at the time, but with new symbols. Then the necessity of interpreting them against the Near Eastern cultural background is removed. Whether or not there is any ultimate relationship [11] between Biblical and Babylonian accounts as we now have them they belong to different ideological worlds. The symbols are not the same because the ideology is different. The goddess Tiamat defeated in a war by the god Marduk, if she may be called a 'symbol', must be seen as a symbol within the context of Babylonian polytheism; whereas the creation of heaven and earth belongs within the context of Biblical thought. It is meaningless to say that God used the same symbol but changed its meaning. It is then no longer the same symbol.

Furthermore, there are important elements in the early chapters of Genesis with no real counterpart in contemporary thought. Of course it is quite possible that such a counterpart existed and has been lost. However, the onus of the proof lies on those who so confidently affirm that Genesis employs the common symbols of the day. There is no real counterpart to the Fall into sin in contemporary literature.[12]

Sometimes it seems that those who claim that the Bible used the symbols of its day are merely trying to say that it used a naive as opposed to a scientific cosmology, or, to put it more popularly, it did not bother to correct the prevalent three-storey cosmology. If we assume for the sake of the argument that this is the case, then it should be clearly recognised that all we have established is that scientific dogma should not be made out of Biblical cosmology. The argument has no relevance to other parts of the account like the creation of animals, man etc. Unfortunately, this argument is generally used without this careful delimitation. Generally it is argued that the fact that one element shows the use of non-scientific concepts proves that the whole uses naive ideas whose details may not be pressed.

Yet once more the validity of the basic premise must be questioned. Was there ever a pure "three-storey universe" idea in antiquity? For the pagan contemporaries of the Bible writers cosmology was theology. The heavens expressed and were controlled by the various divinities. The sort of abstract/mechanical interest involved in the idea of a three-storey universe is a product of the demythologisation of Greek rationalism and Euclidian spacial concepts. One should not try to project a late idea back into Biblical times in order to explain the Bible. In its rejection of polytheism Biblical cosmology is of necessity radically different to its surroundings. It is not popular cosmology.

Secondly, what is so wrong about a "naive cosmology"? It is probably as close to the ultimate truth as modern cosmology. If we had not deified modern science we should not be embarrassed by those points in which Biblical thinking diverges from prevailing modern ideas. Certainly Biblical cosmology fits into a different structure of thought to modern cosmology, but it is the same validity of that very strucure of thought that is at issue. We tend to assume that the assumptions underlying modern physics are unquestionable. If we assume the validity of the structure of physics from any period with its philosophical presuppositions and concomitants [13] we run the risk of accepting a structure which because of its ultimate origin in a total humanistic philosophy must clash with a Biblical world view. What has generally happened is that the structure and method of modern science have been accepted as truth. When the conflict between this and a Biblical view has been appreciated an attempt has been made to give the Biblical view a validity in some sort of restricted religious sphere. The basic question is whether our interpretation of the Bible is to be determined by the Bible itself or by some other outside authority. Once science has been set up as an autonomous authority it inevitably tends to determine the way in which we interpret the Bible. From the point of view of this discussion, the outside authority may be Newton or Hoyle just as well as Darwin or Kant. The issue involved is still the same.

Somewhere in this sort of discussion poor Galileo is always dragged in. Yet if we want to learn from history we should at least begin with good history. There is nothing particularly Christian about Aristotelian cosmology. In fact there are points at which it cannot be reconciled with the Bible. How did the church find itself in the position of defending Aristotelian cosmology against the new Copernican cosmology? It found itself in that position because it accepted the argument of Aquinas that the Biblical texts which contradicted Aristotle should not be pressed as the Bible was not written in technical philosophical language. Moses spoke the language of his day. This is not to say that the church should have accepted readily the new astronomy. In its neo-Pythagorean mysticism[14] it was no more Biblical than Aristotle was. Those who want to say that the Bible is written in the popular language of its day and should not be pressed where it differs from modern philosophical-scientific structures cannot claim to have learned from the Galileo affair. They are merely repeating the arguments that helped to put the church in that situation.

The point to be made in connection with the whole preceding discussion is that the positions discussed tend to introduce a rule for the exegesis of Scripture which is not drawn from Scripture itself. If this is allowed then Scripture is no longer its own interpreter.

Is there any explicit teaching within Scripture itself that its details are not to be pressed in matters of the physical creation? I know of no such teaching and in the whole discussion of this issue I have seen no attempt at specific appeal to the teaching of Scripture. When reference is made to the original creation the creation narrative is treated as fact without any reservations. Peter's argument in 2 Peter 3.5-7 does not shrink from reliance upon some of the details of the Genesis narrative. Other examples of Biblical references back to Genesis (eg Ex 20.11; Matt 19.4; Rom 5.12-19; 1 Tim 2.13,14), to be considered in more detail below, show a similar reference to specific details. Scripture itself gives no warrant for the oft-repeated claim that the details cannot be pressed, and it is not embarrassed to refer to specific details such as creation in seven days (Ex 20.11) and creation of woman from the man (1 Tim 2.13,14).

This should in itself be enough to dismiss the oft-repeated statement that we may not press the details of the account. Yet, as argued above, the position being considered often rests upon a basis of Kantian philosophy. Is this philosophy itself sanctioned by Scripture? It is not because there is no clear distinction made by the Bible between statements concerning the physical creation and theological statements. One influences and determines the other. Note that in the Biblical references given above the form which the original creation took is made the basis of theological and/or ethical teaching. The separation between physical creation and theology is one that has to be imposed upon the text by us. It is not naturally there in the Bible.

It seems a more serious attempt at exegesis when appeal is made to the literary nature of Genesis 1.[15] Even here care is needed that an outside standard be not imposed. One cannot simply define Gen. 1 as poetry by using a standard of poetry drawn from outside the Scripture without assuming the very point at issue. Even if Gen. 1 were poetry we would still be entitled to enquire what truth it conveys. Our answer to that question would have to be framed in terms of the rest of Scripture. If we take the passages referred to above we obtain enough to place us in conflict with modern evolutionary approaches. Thus the claim that Genesis 1 is poetic does not resolve the problem.

Furthermore by what criteria do we call Gen. 1 poetic? The parallelism of days 1-3 to 4-6 is often cited. This however is merely parallelism of ideas and is not the same parallelism that makes up Hebrew poetry. Hebrew poetry consists of a series of couplets or triplets exhibiting complementary, climactic or antithetic parallelism eg. in Ps 5.1 "Give ear to my words, O Lord" is complemented and paralleled by "Consider my meditation." This is clearly different to the fact that on days 1-3 God creates the environment and on days 4-6 the creatures who are to live and rule in the respective environments. One is a parallel on ideas in successive stichoi, the other a parallel of ideas which may be serveral verses apart.

Nevertheless, it may be argued that the very fact that Genesis 1 exhibits such a structure proves that it is not to be taken literally. Surely to state this argument is to refute it. Short of some sort of metaphysical presupposition that regards history as totally random and all order in historiography as being a result of arbitrary human imposition I cannot see how one would ever prove such a proposition. The attempt to make a case by analogy from the book of Revelation is quite beside the point. If we took elements of Revelation as symbolical without explicit Biblical warrant then we would be guilty of imposing an outside standard upon the Scripture. Revelation itself tells us that we are meant to see symbolism in its pictures: "the great city, which spiritually is called Sodom and Egypt, where also their Lord was crucified" (11.8); "And a great sign was seen in heaven" (12.1); " and upon her forehead a name written, Mystery, Babylon the Great . . . I will tell thee the mystery of the woman . . . Here is the meaning that hath wisdom. The seven heads are seven mountains . . . and they are seven kings . . . The waters that thou sawest, where the harlot sitteth, are peoples and multitudes . . . and the woman whom thou sawest is the great city, which reigneth over the kings of the earth" (17:5-18). It is the lack of a similar interpretation of the "symbolism" of Genesis which so sharply distinguishes Genesis and Revelation.

Even though there is no logical reason why the presence of a structure should prove that a passage is not to be taken literally, this idea seems to have great emotive appeal. The whole question of structural history needs to be examined more closely. The title of this paper limits discussion to Gen. 1-11. This is because among evangelicals anywhere there is a willingness to accept the historicity of the patriarchal narratives. However the patriarchal narratives are structured history in the same way as the earlier chapters of Genesis. They fit within a framework created by the heading "These are the generations of. . ." (2:4; 5:1; 6:9; 10:1; 11:10; 11:27; 25:12,19 etc.) There are clear instances of parallel structure. Thus the experiences of Isaac parallel those of Abraham. Both have barren wives (15:2; 16:1; 25:21). Both lie concerning their wives (20:2; 26:7). Both face famine in the promised land (12:10; 26:1).

Both make a covenant with the Philistines (21:22-34; 26:26-33). If parallelism of structure proves that a passage is not historical then the patriarchal narratives are not historical. This of course is the conclusion of many liberal exegetes but evangelicals once more maintain an inconsistency, being willing to apply a higher critical principle in one area of Scripture but not in another.

If one looks carefully at these structured histories one sees that the structure is theological. Abraham and Isaac both face barrenness an famine because they both experience the trial of faith in being forced to believe the promise of God contrary to the physical situation (Rom. 4:17, 18; Heb. 11:8-12).[16] The structure that underlies the parallelism of Gen. 1 is that of covenant vassal and suzerain. On days 1-3 the environment or vassal was created and on days 4-6 the appropriate creature or suzerain to live and rule in that environment. This notion of covenant head and vassal underlies also the story of the Fall in that on the fall of the suzerain the vassal is placed in rebellion against its lord (3:17-19). Further, the idea of covenant structures the whole of history into old and new covenant, each under their respective heads (Rom. 5:12-21; 1Cor. 15:45-49). For the historian who proceeds on antitheistic assumptions such a theological history must be rejected. He must assign all such histories to the category of theological subjectivism. A theologically structured history presupposes a God who actively shapes history so that it conforms to his plan. A liberal exegete who denies the existence of such a God must dismiss as true history all Biblical accounts which see theological patterns in history. The evangelical has no basis for such an *a priori* dismissal of structured history. The fact that Gen. 1 displays a strucure in no way prejudices its claim to historicity.

So far the views discussed have consisted of statements *about* Scripture which were not themselves based *on* Scripture. An *a priori* statement about the Bible cannot claim Biblical authority. Discussion of this area has been obscured by the number of these statements and there is a need to return to exegeting Scripture, and not by hypothesis. There are a number of passages which reflect upon the original creation. Some have been referred to in other connections above.

Ex. 20:8-11 is significant in that it gives us a clear answer to the debated question about whether the "days" of Genesis are to be taken literally. The commandment loses completely its cogeny if they are not taken literally.[17]

This passage is also important in giving a proper direction to our thought. It is often said that the creation is described in seven days because this is the pattern of labour to which the Hebrews were accustomed. The text however says the very reverse. The Hebrews are to become accustomed to a seven day week because that is the pattern that has been set by God. Rather than God being made to conform to an already

established human pattern, man must conform to the pattern that has been set

established human pattern, man must conform to the pattern that has been set by God. The point is an important one as it is crucial to the distinction between true and false religion. The oft repeated claim that human thought and custom has created the categories through which, of necessity, all God's activity must be viewed is a denial of the spirit of Biblical religion. It gives to man the priority which rightly belongs to God.

Ps 104 deserves more consideration in this question than it usually receives. The psalm follows in a general fashion the order of the creation days. The one point that is of particular interest is that the psalmist has integrated the account of Gen. 1 with that of the creation of springs in Gen. 2:4-6. The reference to springs falls where one would logically expect it between the account of the creation of dry land (Ps 104:6-9) and that of vegetation (Ps 104:14-17). The problems of relating the accounts of Gen.1 and 2 is outside the scope of this paper but any attempt must begin with Ps 104. Unfortunately some evangelicals have accepted too readily the assertion of the documentary hypothesis that they are independent accounts of creation. The psalmist knew better.

A number of passages which refer to the original creation of man and woman and their relationship may be considered together (Matt. 19:4; 1Cor. 11:8,9; 1 Tim. 2:13,14). Note that the account is taken literally and made the basis of teaching on the relation of man and woman. Even if in only this point we take issue with evolutionary theory we find ourselves in complete antithesis to naturalistic evolution. If on the authority of Scripture we hold to the Biblical account of the creation of man and woman then we can give up all hope of a harmony between the Bible and "science". The proper subject of this paper is the hermeneutical problem, and these passages are adjuced to show that the rest of Scripture sees the early chapters of Genesis as literal history. It may be objected as a last resort that only those details of the account mentioned as literal by the rest of Scripture may be taken literally. Even if this point be granted there is still enough contained in just these few verses to re-open the battle with evolutionary theory. However, the argument that only those passages in Gen. 1-11 referred to elsewhere as literal accounts are to be taken as such may be summarily dismissed. The early chapters of the Bible are clearly a unity, and whatever hermeneutical method is valid for part is valid for all. This fact has been realised by those who have sought by various arguments to find evidence of "poetry" in one part and to extend it to all. Yet all these attempts in so far as they were not attempts to see how the rest of Scripture treated the chapters in question must be condemned as methodologically faulty. Scripture is its own interpreter.

Against this one might argue that even though the NT treats Gen.1-11 as literal this should not be taken as proving that it is a literal desription. One may argue that the NT writers were accommodating themselves to the beliefs of the time, or that these passages are referred to only as illustrations and that their literalness is not implied by the NT usage. The first alternative must be rejected as involving a denigration of Christ and his apostles. The accommodation argument when used as a way of avoiding the implications of Christ's use of the OT for the doctrine of Scripture has been rightly rejected by evangelicals. [18] It is inconsistent to attempt to revive it to avoid the implications of NT teaching on another subject. Furthermore the fundamental objection against a rule of exegesis drawn from outside of Scripture applies here also. If the accommodation idea is to be allowed in the discussion then it must first be demonstrated that it is itself taught by Scripture.

The second alternative will not bear examination. Clearly in 1 Cor. 11:8,9 and 1 Tim. 2:13,14 the argument of Paul would collapse if the details of the account to which he refers did not happen as recorded. It is foolish to suggest that his point would still be valid even if woman was not created after and from the men and even if Eve was not beguiled into sin. Similarly, Peter's point is without cogeny if the world was not destroyed by the flood (2Peter 3:5,6).

* * * * *

The thrust of this paper has been to direct discussion away from theoretical pre-exegetical arguments over the interpretation of Genesis and to concentrate on the way the rest of Scripture interprets it. We meet simple literalism in the Scriptural exegesis of Genesis. Certainly not all the details of the chapters in question are referred to elsewhere, but when they are literalism prevails. If this be the case, why has so much discussion been concentrated on arguments which are not only inconclusive but also diminish the right of Scripture to be its own interpreter? I suspect that the real debate is not hermeneutical at all. If it were then it would have been decided long ago by a comparison of Scripture with Scripture. The real problem is that we as Christians have in a double sense lost our historical perspective. We have forgotten that the church has always been under pressure to allegorise Genesis so that it may conform with Plotinus or Aristotle or some other human philosophy. We have treated the problem as though it were a modern one and that we alone have had to face the onerous task of holding a view of cosmic and human origins which is out of sympathy with the philosophical premises of our culture. The second sense in which we have lost our historical perspective is that we have forgotten that until our Lord returns we face strife and conflict in this world. We have sought to avoid that conflict in the intellectual realms. We have accepted the claim of humanistic thought that its scholarship is religiously neutral, when the Bible teaches us that no man is religiously neutral. Man either seeks to suppress the truth in unrighteousness or to live all his life to the glory of God. In that total warfare scholarship is no mutually declared truce.

References

1. For the classic statement of the viewpoint the underlies this paper see B.B. Warfield, The Inspiration and Authority of the Bible. Presbyterian and Reformed, Philadelphia, 1964.
2. e.g. M.A. Jeeves “Towards the Recovery of Harmony Between Science and Christian Faith,” Theolog Review, Vol 3, no. 2, 15-23; D.M. McKay (ed), Christianity in a Mechanistic Universe, IVF, Chicago, 1965.
3. Lest this strike the reader as fundamentalist rhetoric I would draw attention to the very important symposium, Mathematical Challenges to the Neo-Darwinian Interpretation of Evolution (P.S. Moorhead and M.M. Kaplan (ed) Wistar Institute Press, Philadelphia, 1967). On page 79 C.H. Waddington answers M.P. Schutzenberger’s argument that evolution according to Neo-Darwinian principles is statistically impossible by arguing that it must be possible because the only alternative would be special creation.
4. As well as the symposium referred to in the preceding note see G.A. Kerkut, Implications of Evolution, Pergamon Press, Oxford, 1960.
5. e.g. J.A. Thompson,“Genesis 1-3. Science? History? Theology?” Theolog Review Vol. 3 no. 3, p.16.
6. This is far from being a new situation. Many techniques of literary and form criticism were used first in the OT field and later created much greater opposition when consistently applied in the NT. Gunkel himself was moved to the OT field from NT when it was realised that his methodology could be applied there and incur less opposition.
7. To use a trivial example, Philadelphia University Museum used to caption the well-known offering stand from Early Dynastic Ur (H. Frankfort, The Art and Architecture of the Ancient Orient Pelican, Harmondsworth, 1954, P.13 and pl. 28) which shows a billy-goat standing with its forelegs on the branches of a tree, as the “ram caught in a thicket”. Saner minds seem to have prevailed and this caption has been removed.
8. Similarly the tendency of research is often to emphasise the discontinuity rather than the relatedness of animal groups (Kerkut, op. cit. p.149).
9. See J.B. Pritchard (Ed), Ancient Near Eastern Texts, 2nd ed. Princeton University Press, Princeton, 1955, p.67 for translation of this text.
10. For discussion see H. Frankfort, Cylinder Seals, Macmillan, London, 1939, pp 205ff. He argues that on Assyrian seals it is a symbol of the god Assur. It is hard to see any connection between this tree and the trees of Eden.

11. It is possible that the Mesopotamian parallels are the results of distortions of the original creation narrative to fit a polytheistic system. If that is the case they would then belong to the same category as the flood account. The argument that the Mesopotamian accounts must be the originals because our extant documents of the Mesopotamian versions are older than the extant Biblical texts (E.A. Speiser, Genesis, Doubleday, Garden City, NY, 1964 p.10) is utter nonsense.
12. It is significant that Speiser who is convinced that the Biblical story was derived from Mesopotamian prototypes (ibid p LV) cannot find a better parallel than the "Civilization" of Enkidu by a prostitute (ibid pp 26f. For translation of this supposed parallel see Pritchard op. cit. p. 75).

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REVIEW

CREATION AND THE FLOOD   Davis A. Young

Baker Book House, Grand Rapids, 1977 £4.20, $6.95

A consideration of the Theology and Exegesis

In the great debate between the 'mature creationism' of the flood-geologists and theistic evolution, Davis Young sees his book as a 'third way'. For Young, the mature creationists are unscientific, the evolutionists unbiblical. His self-imposed task, therefore, is to develop a 'truly Biblical view of geology.'

Theologically, there are good things and bad things in this book. Among the good things, there is an uncompromisingly high view of Scripture. Young upholds the principle of the self-interpretation of Scripture, rejecting the unbiblical interpretations favoured by some scientists (p31). Furthermore, the Bible speaks not only about itself but about science (p34f). Scientific procedures, he believes, should be biblically controlled.

Young is equally emphatic in his opposition to theistic evolution. Taken to its logical conclusion it leads, he believes, to the 'death of genuinely Biblical religion' (p18). Theistic evolutionists tend to have unscriptural views of scripture, and consequently have developed faulty views of other Christian doctrines. Young does not quite manage to substantiate this claim. He certainly establishes no necessary correlation between theistic evolutionism and bad doctrine. This is so because he is content in his treatment of theistic evolutionism to zoom on in three of its exponents (Jan Lever, Richard Bube and P. Teilhard de Chardin) who may not be entirely representative, and are almost certainly not so in Britain. Lever may indeed present a 'watered down and not fully-Biblical' gospel; but opponents of theistic evolution will do their cause a disservice if they extrapolate from this to all evolutionists, for the charge would not always stick. It may be doubted whether Young has the equipment to oppose evolution on theological grounds.

However with the enunciation of these principles, and the bold statement that Genesis is history (p41), we might expect a study free both from subjectivism and from a view of the Bible coloured by scientific prejudices.

In his espousal of the Day-Age Theory, however, this is not quite what we get. The reason lies, I think, in faulty exegesis and biblical interpretation. Three important examples will suffice for comment.

a) yom, i.e., the Hebrew word for 'day'. It is essential to Young's argument that yom should be capable of bearing the meaning 'long period'. He demonstrates that it can in remarkably short space, largely by invoking the authority of Charles Hodge. Hodge, in a treatment both more considered and more tentative than Young's, allowed for the possibility, should scientific evidence some day absolutely demand it, that yom could mean a long period on certain Biblical analogies.

Some of these analogies are inaccurate, e.g. Jdg 17:10, where the expression for 'year' is yamim (the plural of yom). Others, such as 'day of the Lord', 'day of judgement', 'day of salvation', may well testify to a figurative use of the word yom, meaning either an indefinite period, or perhaps, more precisely, an 'occasion'. And that is far from saying that yom is an expression meaning a long time. Furthermore, it is plain that one cannot argue from these cases to the 'days' of Genesis 1, which are specifically bounded by evenings and mornings and set in the framework of a week. There is,in short, no Biblical analogy which would enable us to translate yom in Genesis 1 as a long period of time.

b) bara', i.e., the Hebrew word for 'create'. Young is at pains in his treatment of this expression to show that the activity of God which it describes need not be entirely supernatural and instantaneous, but can include what we would consider natural processes. This is intended to support the view that the work of the 'six days' could have involved natural processes and taken a long time.

Once again, however, his argumentation and analogies break down. He points out that bara' is used to refer to the creation of,e.g.,Israel (Is 43:15), or the blacksmith (Is 54:16), It is clear, the argument runs, that God did not create Israel instantaneously ex nihilo, on Mt Sinai; nor the blacksmith without a father and mother. Therefore bara' usually includes the idea of natural processes.

The trouble is that this argument will ultimately prove too much. It will rule out any creation ex nihilo; indeed any creation that is supernatural at all. We find Young quoting A. Heidel with approval when he says, "there is no conclusive evidence in the entire OT that bara' ever expresses the idea of a creation out of nothing" (Babylonian Genesis, p 39). In fact Young does not want this, and has to admit that the word involves 'some degree of supernatural activity on the part of God' (p97). There had to be a first entirely supernatural act. Now, Young's analogies break down here, because this first act is, by his or anyone else's definition, unique. There is nothing by which to measure the 'degree of supernatural activity' which he allows. Thus it is arbitrary of Young to assume that bara' in Genesis 1 cannot refer to the creation of something already organised and developed.

c) The Curse. A particularly thorny problem arises for the theistic evolutionist in the curse of Gn 3; i.e. the teaching that man's sin introduced suffering and toil into the creation. The evolutionists normally hold that death, destruction and suffering were already in the animal world before man turned up. Young's solution to this difficulty is to maintain that the curse only bears upon man himself. Even the curse on the ground is only a relative thing designed to make man's life more difficult. As far as the creation as a whole is concerned, the Fall made little difference.

This is probably the worst case of special pleading in the book. One passage will refute the view proposed. In Romans 8 the 'whole creation' is said to be 'subjected to futility' and 'in bondage to decay' (RSV). Young thinks there is no demonstrable connection between this state of the creation and the Fall of man. And he maintains that the world, apart from man, has ever been so. But this is impossible in view of God's declaration at each stage of the creation inGn 1 that 'it was good'. Sometime there was a rupture, and it is impossible not to refer it to the Fall of man. This is confirmed by the fact that Romans 8 (like e.g. Is 11:6ff) expresses a hope for the redemption of all creation as part of the same act of God by which men themselves will be redeemed.

It emerges from the foregoing that, despite Young's protestations about a Biblically-controlled method, the real control he applies is his scientific presuppositions. His determination to maintain the long age of the earth has moulded his exegesis, so that at times his reading of Scripture is very wide of the mark indeed. This book will not reinstate the Day-Age Theory; if anything it shows the weakness of the theory's exegetical foundations.

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Both these books are available from the Evangelical Bookshop, College Square East, Belfast; and the Christian Bookshop, Forrest Rd, Edinburgh.

REVIEW

EVOLUTION: POSSIBLE OR IMPOSSIBLE ? James F. Coppedge (Director of Probability Research in Biology, Northridge, California) Zondervan, Grand Rapids, 1973 207pp Approximately £2

Dr. Coppedge tackles his subject in the area of biochemistry. Applying some elementary probability theory to present-day knowledge about the chemistry of life, he obtains various order of magnitude estimates of the probabilities that gene or protein structure could have been generated by random processes in our universe. Although perhaps not quite as conclusive as the author seems to believe, the results are certainly striking, and should impress the reader with creationist sympathies. The book also contains much useful information for the creationist himself.

The first two chapters introduce scientific notations (e.g. 10^6 = 10,000, 000), and the very simple concepts of probability used in the book. Most students with a science background will already be familiar with these ideas and a careful reading of the introductory chapters should put them well within the reach of many others. Indeed, that a surprisingly robust case can be built with such simple tools is a very attractive feature of the writer's approach; especially so as the basic arguments appear capable of expression in terms of concepts of considerably greater sophistication (for example, information theory, thermodynamical considerations).

Dr. Coppedge considers two main subjects: the problem of 'handedness' in life; and the concept of 'meaningfulness' as applied to protein and gene structure. (A meaningful structure is one that carries information, or, equivalently, has properties useful to life).

In the absence of more suitable information, Dr. Coppedge uses an estimate of potential meaningfulness which is derived from the structure of (the English) language. His results cannot be therefore used as direct evidence against evolution as the author would wish. The strength of his argument, however, lies in the astonishingly small probabilities the method forecasts, even when ridiculously large safety margins are assumed. The early biochemical information structure would have had to be very imprecise indeed to afford any significant chance of forming useful gene and protein structure in a universe of similar space and time dimensions to our own. If the evolutionist wishes to postulate such imprecision, we cannot of course stop him: however, we should be entitled to a reasonable explanation.

The problem of handedness stems from the fact that 'the building blocks of life', amino acids, can each take one of two complementary forms, just as a screw can be left-handed or right-handed. Under most circumstances the two forms occur in equal quantities, but under carefully controlled laboratory conditions the yield of one can be increased over the other: Dr. Coppedge indicates that, according to the best published result, this is about by six per cent. All protein structure found in life, however, consists without known exception of amino acids of the same hand. This fact poses great difficulties for theories relating to the origin of life.

Dr. Coppedge discusses this subject very thoroughly, considering the level at which the book is written, and includes two appendices to discuss proposed explanations. His case against random origin is well argued, and, I believe, an extremely strong one.

Besides the main body of the book, there are two chapters, in which Dr. Coppedge mentions briefly other aspects of the evolution/creation debate, a chapter containing the author's explanation for the widespread acceptance of the evolutionary hypothesis today, and a useful appendix discussing the oft-quoted results of Oparin (the Oparin coacervates) and Fox (the Fox microspheres). Dr. Coppedge also includes many verbal illustrations to give the reader a 'feel' for the size of the numbers under consideration, and notes the commonly held fallacy that a postulated lifetime of 10^{10} years for the universe has any significant effect on such numbers.

The author writes with a warm enthusiasm which communicates itself to the reader. As a result he is able to explain some fairly complex ideas very clearly, as for example the structure and operation of DNA. He does write, however, as a convinced creationist attacking what he sees as an untenable evolutionist position. Indeed, his aims in writing the book are to present evidence that will 'enable the reader to arrive at the certainty that materialistic evolution cannot be true', and to 'promote positive appreciation of the Creator'.

It is, alas, the case in the reviewer's experience that much creationist literature contains exactly the faults of dogmatism, loose reasoning, and hasty conclusions, which creationists are quick to point out in their counterparts. This one is unfortunately not free of the taint, for example: 'this book introduces a practical shortcut to certainty about evolution' (p32); 'it is clear that the long ages of the geologic time scale are a matter of faith rather than evidence' (p195); and, talking of DNA, 'it would seem self-evident that any such complex message system, which is seen to be wise and effective, requires not only an intelligence but a person back of it' (p138). Although I sympathise with the author's feelings, and probably hold similar beliefs to his, I cannot condone such remarks in a book intended for general readership. I would not, personally, give the book to a non-creationist unless I considered him open-minded or sympathetic enough to ignore potentially inflammatory statements of this kind.

Nevertheless I do believe the book to be one of the most useful available to the creationist, containing as it does much valuable information on the current scientific problems connected with the origin of life. The argument based on handedness is, I believe, a strong one, and Dr. Coppedge's general approach to his subject is instructive. I warmly recommend the book to anyone wishing to have anything more than a superficial grasp of creationist arguments.

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